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ABSTRACT

This paper reports evidence indicating that adapted exercise has a preventive effect on the incidence and progression of chronic diseases which are often related to the aging process. Exercise is known to preserve many physiological responses in the healthy elderly, yet those with physical impairments are often discouraged from exercising because they are considered either too fragile or too mentally inept to receive benefits from physical exercise. However, their need for physical movement and self-esteem is the same as for the "normal" population. The cost/benefit ratio will have far-reaching economic impact if the progress of degenerative disease is ameliorated by regular exercise. Exercises should be modified and adapted to provide for varying levels of skills and ability among senior citizens. Key to developing a safe and beneficial program is a facilitator/instructor who is aware of the following: (1) normal and abnormal responses to exercise; (2) knowledge of whether responses are functional, behavioral, or medication-related; (3) knowledge of correct techniques for exercise movements; and (4) the ability to adapt exercises to extenuating circumstances. Exercise programming based on facts, not stereotypes, should be available for all older adults and, in particular, the mentally impaired, diseased, or otherwise disabled older adult. (LL)

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Promotion Considerations for Exercise and Physical Activity in Mentally Impaired, Diseased, and Disabled Older Adults

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Little is known about the effect of physical activity on mentally impaired, diseased, and disabled older adults. Health care and education professionals have tended to overlook the needs and requirements of these older adults in relation to exercise and physical activity. The majority of studies involve older adults who live in the public sector and are termed in "good health." The size of the entire older adult population is dramatically increasing. By the year 2000 those over 65 will total 36 million, 13.2 percent of our citizenry (DiGilio & Howe, 1984). Further, this growth is predicted to continue to grow, increasing disproportionately compared to other cohorts past the turn of the century (Piscopo, 1985; DiGilio & Howe, 1984; Heitmann, 1982; Forman, 1981; Boarman, 1989).

As the general older adult population grows so does the number of older adults who are mentally impaired, diseased, and disabled. Eleven percent of the United States population contains people who are moderate or severely disabled, with approximately 40% of those over the age of 60 (Kemp, 1983). Kemp (1983) continues, that the chances of a person with an early life disability living to older age has also increased. Epidemiologic studies have found that between four and six percent of all older adults age 65 and above in this country suffer from an organic brain syndrome; percentages as high as 50% have been established for older individuals seen in inpatient and outpatient health and mental health facilities (Toseland, Derico, & Owen, 1984). (Organic brain syndrome is a term used to describe one or more of these symptoms: delirium, dementia, amnestic syndrome, organic hallucinations, organic delusional syndrome, organic affective syndrome, organic personality syndrome, intoxication and withdrawal, and atypical or mixed organic brain syndrome.)

Wright and Whalley (1984) claim that senile dementia is now a major public health problem. It affects one in twenty of those over 65 years of age and one in four of those aged 80 or more. Alzheimers disease (a type of dementia) accounts for as many as 90,000-100,000 deaths in the United States per year, making it along with accidents the fourth or fifth most common cause of death after heart disease, cancer, and stroke (Toseland et al., 1984).

As the older adult population grows, the economic ramifications to the nation's health care delivery system are expected to reach record levels. Older adults who additionally have chronic diseases and disabilities will further stress this capacity resulting in jeopardizing the quality and quantity of health care provisions. One solution to alleviate this dilemma is exercise and physical activity programming. If physically passive patients can be persuaded to maintain muscle and joint function by adhering to a simple exercise program, extensive savings to the community in medical costs could be achieved (L[illegible]erbland, 1984).

There is increasing evidence that exercise nas a preventive effect on the incidence and progression of chronic diseases which are often related to the aging process (Brown, Cundiff, & Thompson, 1989). A study by Dustman, Ruhling, Russell, Shearer, Bonekat, Shigeoka, Wood, and Bradford (1984), found a marked improvement in neuropsychological function and physical fitness in previously sedentary individuals aged 55-70 years after a four month aerobic exercise program. Molloy, Beerschoten, Borrie, Crilly, and Cape (1988) found that physically fit elderly scored higher on tests of fluid intelligence than age-matched sedentary controls, and elderly patients who have taken part in exercise programs have shown improvement in mental function. Rikli and Edwards (1991) suggest that it

is never too late for sedentary individuals to realize the benefits of exercise participation and significantly reverse certain motor and cognitive performance declines. Further, exercise can benefit disabled persons who have life styles similar to the non-disabled population but, because they have been burdened with a disability, are more likely to "age" faster (Kemp, 1983).

Exercise is known to preserve many physiological responses in the healthy elderly, yet those with physical impairments are often discouraged from exercising (Thompson, Crist, Marsh, & Rosenthal, 1988). McPhillips, Pellettera, Barret-Connor, Wingard, and Criqui (1989) found that exercise frequency was lower in those with a history of chronic disease, obesity, or current cigarette smoking, and exercise was positively associated with physical and emotional functioning and self-rated health. Taylor, Sallis, and Needle (1985) list six responses of exercise:

1. Physical activity and exercise appear to alleviate symptoms associated with mild-to-moderate depression.
2. Physical activity and exercise are associated with such mental health benefits as improved self concept and confidence (at least in children and adolescents) and social skills (at least in mentally retarded individuals).
3. Physical activity and exercise are associated with reduction of symptoms of anxiety and perhaps improved mood.
4. Physical activity and exercise may alter some aspects of the stress response and coronary-prone (Type A) behavior.

5. Negative psychological side effects can occur from exercising or stopping exercise and may interact with personality disorders and other personal problems in negative ways.
6. Physical activity and exercise might provide a benefit adjunct to alcohol and other substance abuse programs.

Misconceptions about mentally impaired, diseased, and disabled older adults as being too fragile or mentally inept to receive benefits from physical exercise are perpetuated in our society. These individuals may, in fact, be inept in all or part of their daily functions, however, their need for physical movement, aspirations, and self esteem is the same as the normal population. Physical fitness and exercise programming for the mentally impaired, diseased, and disabled older adult will enhance physiological functions and will likely result in aiding the individual to achieve a more independent lifestyle. The benefits of exercise will have a far-reaching economic impact if the progress of degenerative diseases is ameliorated by regular exercise (Brown, 1989).

Exercise programming for the diseased and disabled older adult is diverse as this population has many special needs. Kemp (1983) adds that disabled persons have frequently lacked strenuous physical exercise, which may be the most important factor of exercise as there has not been an opportunity to develop cardiac and respiratory reserves. The mentally ill older adults may demonstrate numerous behavior deviations such as multiple maladaptive behavior, aggression, self-injurious behavior, property destruction, noncompliance, inappropriate sexual behavior, elopement, verbal abuse, physical abuse, stealing, lying, and behavior endangering others, for which the facilitator needs to carefully prepare and plan to insure safety and benefit.

Exercise prescription for the mentally ill older adult depends upon the participant's ability tc understand and execute the correct motor command to a given stimulus. The type of specific mental illness and corresponding medication must be understood to provide an appropriate exercise prescription. Modification of exercise should be expected to provide for varying levels of skills and ability to receive and interpret stimuli to produce a successful response.

Individuals with common chronic diseases such as degenerative joint disease, hypertension, back syndrome, emphysema, hypothyroidism, diabetes mellitus, dizziness, and ataxia also require that prescribed exercise programs be variable allowing for individual alternate adaptations to elicit the desired response.

Older adults who have experienced strokes, heart attacks, amputations, fractures, sensory deficits, and other functional limitations also fall into the disabled category if for some only a limited time. The option of cardiovascular rehabilitation through exercise is often overlooked for elderly cardiac patients (Williams & Sketch, 1990). Regardless of individual differences, an exercise prescription to promote physical fitness that will in turn promote quality of life should be available to everyone. Developing an exercise program for the mentally impaired, diseased, and disabled older adult involves some basic considerations and use of various stimuli to entice movement and continued exercise:

1. Various methods of exercise can be employed with emphasis on simple movement, not complex, multifaceted, high skill, coordinated movements. (Details of alternate stimuli to produce simple movement should be known by facilitator.)

2. Adaptations to specific movement must be considered to provide for alternate modes of learning for progression to specific movement.
3. Short attention spans, inability to relate to reality, and short term memory require more intensive means of instruction.
4. Poor vision and/or auditory deficiencies may require one-to-one involvement to maintain exercise movement.
5. Tactile and proprioceptive cues may be needed to begin an initial movement progression with the individual which they can continue on their own.
6. Be aware of abilities, strengths, disabilities, and behavior problems.
7. Do not expect unreasonable performances. (Some exercise performances may elicit little motor movement but may provide the individual with great gratification.)
8. Allow for independence of movement, do not hurry individual to perform.
9. Directions to exercise should be simple and concise.
10. Courteous verbal cues may be needed as reminders and/or as reinforcement to elicit movement.
11. Use of familiar words and equipment are usually the most successful.
12. Decrease undesirable distractions in the exercise environment.
13. Bright colors help stimulate movement.
14. Exercises should be designed and adapted to produce successful results for all participants.

During an exercise session it is important that the facilitator be aware of acceptance and ability to perform the desired movement. Following are some observable reactions to exercise stimulus:

1. Smiles, relaxed facial features.
2. Anxious movements induced from exercise.
3. Desire to repeat.
4. Efforts to concentrate and attempt movement.
5. Efforts to ignore or show disinterest.
6. Parallel observation/participation by onlookers to exercise group.
7. Lack of withdrawal.
8. Reaction to other individuals in group.
9. Lessening of confusion or less tenseness.
10. Ability for bilateral or unilateral movements.
11. Postural irregularities.
12. Coordinations.
13. Limits to range of movement.
14. Ocular control.
15. Reflexes.
16. Auditory perceptions.
17. Changes of skin color.
18. Sensitivity to touch.
19. Sensitivity to sound/noise.
20. Behavior changes.

Perhaps the most important key to developing a safe and beneficial program is a knowledgeable facilitator/instructor. The facilitator/ instructor must be aware of normal and abnormal responses to exercise, whether the response is functional, behavioral, or medication related. Correct techniques for exercise movements and how to adapt exercises to extenuating circumstances are necessary to meet the diverse and special needs of the mentally impaired, diseased, and disabled older adult. To

promote successful exercise experiences and further promote participation in exercise, it is imperative that realistic short-term goals are set to help assure success and reinforce movement. Motivation promotion should be a constant concern of the exercise facilitator. Convincing an individual of the importance of exercise should involve several factors: maturity, physical, emotional, intellectual, and social skill levels. These factors allow different interpretations and stimulate internal and external forces on an individual basis, resulting in individual response to physical activity and exercise.

There continues to be disagreement as to whether vigorous exercise, which reaches recommended heart rate levels (60% to 90% of maximum heart rate reserve, or 50% to 85% of maximum oxygen uptake, American College of Sports Medicine, 1986) is necessary for the individual to benefit from exercise. Monahan (1987) questions the concept of fitness by questioning the benefit goals of exercise. Should the goal of an exercise program be the ability to exercise vigorously or the ability to carry out every day routines? Many elderly patients are unable to tolerate such vigorous physical exercise, but do participate in light exercise for longer periods of time than do their younger counterparts (McPhillips et al., 1989). Fast walking may offer adequate aerobic training stimulus for most older adults (Porcari, McCarron, Kline, Freedson, Ward, Ross, & Rippe, 1987). Simple exercises that prevent contractures and, as far as possible, correcting present contractures, can be easy to learn and perform as well as enhance individual motivation to continue exercising (Lonnerbland, 1984). Diesfeldt and Diesfeldt (1977) found that memory improved after 40 minutes of very light exercise in debilitated patients who could not tolerate vigorous activity.

The optimum type, duration, and frequency of physical activity largely depends on the medical status of the individual (Piscopo, 1985). Thus motivation, realistic goals, everyday functioning, and physical condition become determining factors of exercise prescription.

Logically, exercise prescription should start with basic needs such as developing skills to perform tasks of everyday living and then progress to moderate, and later to vigorous, exercise, depending on the capacity, motivation and goals of the participant.

Another component of exercise and the older adult is society's influence upon acceptance of physical activity and exercise toward this age group. Some cultural norms are outdated, ungrounded myths that influence acceptance and participation by the older adult. When designing a physical activity/exercise program, these biases should be considered and steps should be taken to educate the participants to the facts. The biases that are listed not only apply to mentally impaired, diseased, and disabled adults, but to all of the older adult population:

1. Many believe that it is too late to benefit from an exercise program.
2. Many believe that as they grow older their need for exercise diminishes.
3. Many have joint pain and are afraid exercise will worsen the condition.
4. Many believe that for their "age" they are active enough.
5. Many overrate the benefits of short irregular exercise sessions.
6. Many believe that they do not have the necessary skill to exercise or do not possess an adequate knowledge about exercise.

7. This cohort has a low percentage of individuals who have been exposed to physical education classes, especially women.
8. Many fear that they will become injured if they exercise.

Misconceptions about aging and being old are pervasive. Stereotypes of the older adult as fragile and mentally inept are perpetuated in our society. The benefits of exercise are too important to allow these concepts to be perpetuated. Quality of life decreases as the ability to move is lost; the result is dependence on others and lack of control of one's own life.

It is now generally accepted by clinicians and scientists that people of all ages receive physical and emotional benefit from appropriate exercise programs (Van Camp & Boyer, 1989). These basic concepts can be used to form objectives and goals for all older adults:

1. Maintain or improve flexibility.
2. Maintain or improve physical condition and function.
3. Psychological well being (relieve anxiety, reduce depression).
4. Provide social opportunities (promote group interaction).
5. Promote life satisfaction.
6. Maintain or raise self concept, self esteem.
7. Promote communication.
8. Maintain or improve cognitive skills.
9. Provide opportunities for self fulfillment.
10. Provide opportunities for emotional outlets.
11. Provide opportunities to achieve a source of joy and pleasure.

These basic concepts can be used to promote the sense of movement that is inherent in human activity, to encourage the ability to respond, and to support quality of life. Possibly older adults have not been encouraged

strongly or convincingly enough to motivate them to enjoy the benefits of exercise. To be free to enjoy movement and its sense of well being is clearly related to physical condition, social expectations, exercise knowledge, and personal goals. Exercise programming based on facts, not stereotypes, should be available for all older adults and, in particular, the mentally impaired, diseased, and disabled older adults.

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